Patent claims

1. A balancing shaft for an internal combustion engine, which balancing shaft consists of a tubular hollow body and has a balancing weight and also functional elements arranged on the hollow body, characterized in that the balancing weight (5) is arranged on and fastened to the outer circumference (4) of the hollow body (2).

2. The balancing shaft as claimed in claim 1, characterized in that the balancing weight (5) is integrally formed on a hub (12) which locally encloses the hollow body (2) and is fastened to the latter.

3. The balancing shaft as claimed in either of claims 1 and 2, characterized in that the balancing weight (5) is connected to the hollow body (2) in an interference fit.

4. The balancing shaft as claimed in one of claims 1 to 3, characterized in that the functional elements are arranged as individual components on the hollow body (2) and are connected to the latter in an interference fit.

5. The balancing shaft as claimed in one of claims 1 to 4, characterized in that the balancing weight (5) and/or the functional elements are additionally connected to the hollow body (2) in a positive-locking manner.

6. The balancing shaft as claimed in one of claims 3 to 5, characterized in that the hollow body (2) is plastically expanded

at the location of its connection to the balancing weight (5), and in that the balancing weight (5) is expanded at this location in such a way as to spring back elastically.

7. The balancing shaft as claimed in one of claims 1 to 6, characterized in that the hollow body (2) is connected at one end in one piece with a connecting component (10) for drive components such as chain wheels or centrifuges, the connecting part (10) closing the hollow body (2).

8. A method of producing a balancing shaft, a balancing weight and also functional elements being fastened to a tubular body, characterized in that the balancing weight (5) is positioned on the outer circumference (4) of the hollow body (2) and is fastened there.

9. The method as claimed in claim 8, characterized in that, by means of a hub (12) on which the balancing weight (5) is integrally formed, said balancing weight (5) is pushed onto the hollow body (2) and is then fastened.

10. The method as claimed in either of claims 8 and 9, characterized in that the balancing weight (5) positioned on the hollow body (2) is connected to the latter, with an interference fit being formed.

11. The method as claimed in one of claims 8 to 10, characterized in that the functional elements, with a bore (11), are pushed as individual components onto the hollow body (2) and are connected to the latter, with an interference fit being formed.

12. The method as claimed in either of claims 10 and 11, characterized in that the interference fit is formed by partial expansion of the hollow body (2) by means of fluidic internal high pressure, the hollow body (2) being plastically expanded locally at the location of the pushed-on balancing weight (5) and/or of the functional elements, and the balancing weight (5) and/or the functional elements being expanded so as to spring back elastically.

13. The method as claimed in claim 12, characterized in that the wall of the through-opening (13) of the hub (12) and/or the wall of the bore (11) with which the balancing weight (5) and/or the functional elements are pushed onto the hollow body (2) are/is designed to be rotationally asymmetric, and in that, by means of fluidic internal high pressure, the hollow body (2) is connected to the balancing weight (5) and/or the functional elements in a positive-locking manner by at least partial contact with rotationally asymmetric surfaces of the wall of the through-opening (13) of the hub (12) and/or of the wall of the bore (11).

14. The method as claimed in one of claims 8 to 13, characterized in that at least one of the open ends (9) of the hollow body (2) is friction welded to a connecting component (10) closing the end and intended for drive components such as chain wheels or centrifuges.